Claims

[c1]   1. A pneumatic control system for a water cannon that has a barrel for holding a body of water, the barrel having an open end through which a body of water is driven by the application of a fluid-related force and a substantially closed end, the pneumatic control system comprising:

a valve capable of being placed in a primed state in which said first valve is primed to cause a fluid-related force to be applied to a body of water located within a barrel of a water cannon and a fire state in which said first valve causes a fluid-related force to be applied to a body of water located within a barrel of a water cannon;

a pneumatic trigger having an trigger input for receiving a disable/enable signal and having a trigger output for providing a fire signal if said disable/enable signal is in an enable state;

a first pneumatic device having a first input for receiving a firing/priming signal and having a first output for providing a first prime signal if said firing/priming signal is in a firing state;

a second pneumatic device having a second input for receiving a second prime signal and having a second output for providing said disable/enable signal to said pneumatic trigger; and

a third pneumatic device having a gas input for receiving a gas, a third input for receiving said first prime signal, and a fourth input for receiving said fire signal; said third pneumatic device having a third output for providing said second prime signal to said second pneumatic device after said third pneumatic device receives said first prime signal;

said third pneumatic device having a fourth output for providing said firing/priming signal in a firing state to said valve and said first pneumatic device after said third pneumatic device receives said fire signal from said pneumatic trigger, said firing/priming signal in a firing state placing said valve in said fire state;

wherein said third pneumatic device is only capable of being responsive to one of said first prime signal and said fire signal at any point in time.
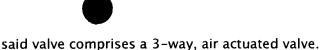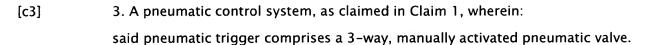
[c2]   2. A pneumatic control system, as claimed in Claim 1, wherein:

said valve comprises a 3-way, air actuated valve.

[c3]   3. A pneumatic control system, as claimed in Claim 1, wherein:

said pneumatic trigger comprises a 3-way, manually activated pneumatic valve.
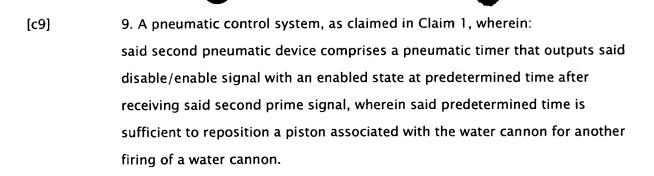
[c4]   4. A pneumatic control system, as claimed in Claim 1, wherein:

said first pneumatic device comprises a pneumatic timer that outputs said first prime signal at predetermined time after receiving said firing/priming signal when said firing/priming signal is in a firing state, wherein said predetermined time is sufficient to expel a body of water from the open end of the barrel of a water cannon.
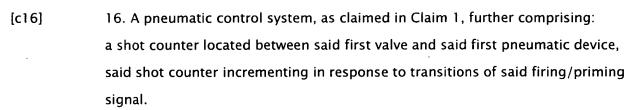
[c5]   5. A pneumatic control system, as claimed in Claim 1, wherein:

said first pneumatic device comprises a pneumatic timer that outputs said first prime signal at predetermined time after receiving said firing/priming signal when said firing/priming signal is in a firing state, wherein said predetermined time is sufficient to move a piston associated with the water cannon so as to expel a body of water from the open end of the barrel of a water cannon.

[c6]   6. A pneumatic control system, as claimed in Claim 1, wherein:

said first pneumatic device comprises a pneumatic sensor for sensing when a piston associated with the water cannon is at a predetermined position that is indicative of a body of water having been expelled from the open end of the barrel of a water cannon.

[c7]   7. A pneumatic control system, as claimed in Claim 1, wherein:

said first pneumatic device comprises a pneumatic sensor for sensing a level of water that is indicative of a body of water having been expelled from the open end of the barrel of a water cannon.

[c8]   8. A pneumatic control system, as claimed in Claim 1, wherein:

said second pneumatic device comprises a pneumatic timer that outputs said disable/enable signal with an enabled state at predetermined time after receiving said second prime signal, wherein said predetermined time is sufficient to load a body of water into the barrel of a water cannon.

[c9]   9. A pneumatic control system, as claimed in Claim 1, wherein:

said second pneumatic device comprises a pneumatic timer that outputs said

disable/enable signal with an enabled state at predetermined time after

receiving said second prime signal, wherein said predetermined time is

sufficient to reposition a piston associated with the water cannon for another

firing of a water cannon.

[c10]   10. A pneumatic control system, as claimed in Claim 1, wherein:

said second pneumatic device comprises a pneumatic sensor for sensing when a

piston associated with the water cannon is at a predetermined position that is

indicative of a body of water having been loaded into the open end of the barrel

of a water cannon.

[c11]   11. A pneumatic control system, as claimed in Claim 1, wherein:

said second pneumatic device comprises a pneumatic sensor for sensing when a

piston associated with the water cannon is at a predetermined position that is

indicative of a piston associated with the water cannon being sufficiently

repositioned for another firing of a water cannon.

[c12]   12. A pneumatic control system, as claimed in Claim 1, wherein:

said third pneumatic device comprises a four-way, double pilot actuated valve. .

[c13]   13. A pneumatic control system, as claimed in Claim 1, wherein:

said third pneumatic device having a fifth output for providing a portion of the

gas received at said gas input to the barrel of the water cannon to facilitate

retraction of a piston associated with the water cannon.

[c14]   14. A pneumatic control system, as claimed in Claim 1, further comprising:

an air filter for receiving a stream of air and outputting a filtered stream of air

to said gas input of said third pneumatic device.

[c15]   15. A pneumatic control system, as claimed in Claim 1, further comprising:

pressure indicator located between said pneumatic trigger and said second

pneumatic device, said pressure indicator being responsive to said

disable/enable signal.

[c16]   16. A pneumatic control system, as claimed in Claim 1, further comprising:

a shot counter located between said first valve and said first pneumatic device, said shot counter incrementing in response to transitions of said firing/priming signal.

[c17]   17. A pneumatic control system for a water cannon that has a barrel for holding a body of water, the barrel having an open end through which a body of water is driven by the application of a fluid-related force and a substantially closed end, the pneumatic control system comprising:

first pneumatic control means for producing a pneumatic safety-on signal after a body of water has been expelled from the open end of the water cannon to place a pneumatic trigger in a disabled state and producing a pneumatic safety-off signal after a sufficient amount of water has been loaded into the barrel of the cannon to place a pneumatic trigger in an enabled state; and

second pneumatic control means, responsive to a pneumatic fire signal from the pneumatic trigger, for producing a pneumatic firing signal for causing a valve to allow a fluid related force to be applied to the sufficient amount of water in the barrel of the water cannon.

[c18]   18. A pneumatic control system, as claimed in Claim 17, further comprising:

a pneumatic trigger for receiving said safety-on signal and said safety-off signal and producing said pneumatic fire signal ; and

a valve for receiving said pneumatic firing signal.

[c19]   19. A pneumatic control system, as claimed in Claim 17, wherein:

said first pneumatic control means includes a pneumatic timer.

[c20]   20. A pneumatic control system, as claimed in Claim 17, wherein:

said first pneumatic control means includes a first pneumatic timer and a second pneumatic timer.

[c21]   21. A pneumatic control system, as claimed in Claim 17, wherein:

said first pneumatic control means includes a pneumatic sensor and a pneumatic gate that is responsive to a signal output by said pneumatic sensor.

[c22]   22. A method for controlling a water cannon that has a barrel for holding a body

of water, an open end through which a body of water is driven by the application of a mechanical force and a substantially closed end, the method comprising:
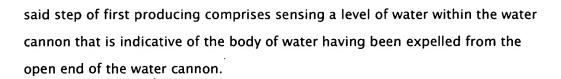
first providing a valve capable of being placed in a primed state in which said valve is primed to cause a fluid-related force to be applied to a body of water located in the barrel of a water cannon and a fire state in which said valve causes a fluid-related force to be applied to a body of water located in the barrel of the water cannon;

second providing a pneumatic trigger capable of being placed in a disabled state and an enabled state, and when said pneumatic trigger is in said enabled state, capable of producing a pneumatic fire signal;

first producing, after a body of water has been expelled from the open end of the water cannon, a pneumatic safety-on signal to place said valve in said primed state and to place said pneumatic trigger in said disabled state;

second producing, after said step of first producing and after a sufficient amount of water has been loaded into the cannon, a pneumatic safety-off signal to place said pneumatic trigger in said enabled state;

third producing, after said step of second producing and after said pneumatic trigger produces a pneumatic fire signal, a pneumatic firing signal that causes said valve to transition from said primed state to said fire state to allow a fluid-related force to be applied to the sufficient amount of water in the barrel of the water cannon.

[c23]   23. A method, as claimed in Claim 22, wherein:
said step of first producing comprises waiting a predetermined amount of time after said step of third producing that is indicative of the body of water having been expelled form the open end of the water cannon.

[c24]   24. A method, as claimed in Claim 22, wherein:
said step of first producing comprises sensing a position of a piston associated with the water cannon that is indicative of the body of water having been expelled from the open end of the water cannon.

[c25]
         25. A method, as claimed in Claim 22, wherein:

said step of first producing comprises sensing a level of water within the water cannon that is indicative of the body of water having been expelled from the open end of the water cannon.

[c26]   26. A method, as claimed in Claim 22, wherein:
said step of second producing comprises waiting a predetermined amount of time after said step of first producing that is indicative of a body of water having been loaded into the barrel of the water cannon.

[c27]   27. A method, as claimed in Claim 22, wherein:
said step of second producing comprises sensing a position of a piston associated with the water cannon that is indicative of the piston being sufficiently repositioned for another firing of the water cannon.

[c28]   28. A method, as claimed in Claim 22, wherein:
said step of second producing comprises sensing a level of water within the barrel of the water cannon that is indicative of a body of water having been loaded into the barrel of the water cannon.